

Ownership matrix	RPP-27195
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## 1.0 PURPOSE AND SCOPE

(5.1.1, 5.1.2)

This standard describes control measures and processes for Hanford Tank Operations Contractor (TOC) activities to protect employees from exposure to hazardous biological agents (HBA), including:

- Hantavirus Pulmonary Syndrome (HPS), or Hantavirus Cardiopulmonary Syndrome (HPCS), from potential contact with rodent (deer mice) urine/feces
- Blood or materials contaminated with blood (e.g., bloodborne pathogens)
- Diseases from potential contact with rodent/bird/bat urine/feces (e.g., histoplasmosis)
- Respiratory/allergic responses to spores and fungal growth (e.g., molds) in facilities where employees work
- Legionellosis (Legionnaires Disease) from legionella bacteria in water systems, cooling towers, and evaporative coolers in facilities and portable equipment used in TOC operations.

Potential exposure to HBAs in the TOC occupational environment is minimal; however, it is important to minimize contact with animals and/or locations where exposure could occur. Human infection could result from inhalation of aerosolized dusts from infected animal excreta (urine, feces, saliva), from fungal spores, or aerosolized mists from water systems containing *legionella* bacteria. Facility and water system maintenance, regular housekeeping, biological (pest) control, and use of standard precautions are general practices that minimize exposure.

This standard identifies roles, responsibilities, planning guidelines, and precautions for cleanup of hazardous biological agents to mitigate risk from exposure, which include:

- Employee training in recognition of conditions where HBA hazards may exist
- Elimination/minimization of conditions that present HBA hazards
- Use of animal repellents and extermination measures
- Maintaining and operating evaporative water systems between recommended temperatures or using biocides in water treatment systems to minimize bacterial growth
- Use of standard precautions when contacting HBAs.

## 2.0 IMPLEMENTATION

This procedure is effective on the date shown in the header.

**3.0 STANDARD**  
(5.1.1, 5.1.2)

Roles and responsibilities under this standard are identified for Managers, Building Managers, Janitorial Services, Responsible Managers, Industrial Hygiene, Waste Services, Training, and Employees.

Custodians clean-up and remove minor amounts of rodent waste in indoor, occupied facilities. Such facilities have active ventilation for clean-up activities. The appropriate General Hazard Analysis (GHA) for janitorial clean-up of rodent waste is required.

If significant hazards are present due to the quantity of HBA or work location (e.g., outdoors, radiologically-controlled areas, asbestos-controlled areas, beryllium-controlled areas, etc.), as determined by the Responsible Manager with safety and health (S&H) input, a planned work activity may be developed in accordance with TFC-OPS-MAINT-C-01.

- Operations cleanup of HBA, which includes all non-janitorial clean-up, is performed in accordance with TO-100-052.
- Consult Environmental Protection staff to determine if there are restrictions on clean-up of bird nests and waste per TFC-ESHQ-ENV\_PP-C-09.
- Tables 1 through 4 provide general information and controls that should be considered during the planning process.
- Attachment A identifies a biohazard sign that may be used to identify areas with potential biohazards. The sign shall be posted in a manner to prevent inadvertent entry into an area with biohazards and should remain in place until the area has been cleaned and disinfected.

**3.1 Managers**

- Ensure appropriate actions are taken for activities where employees have increased risk of exposure to HBAs while performing assigned work.
- Identify when relocation of employees from situations of increased risk/contact is warranted, such as:
  - Risk of exposure for employees who have increased risk or sensitivity to contact with HBA such as mold
  - Significant risk of exposure for facility occupants where animal infestation results in unsanitary conditions.
- Ensure routine inspections of employee work locations are performed, and verify sanitary conditions are maintained per TFC-ESHQ-S-STD-27, such as:
  - Entry into, and/or conducting dust-disturbing activities in unoccupied or seldom accessed facilities or enclosures (e.g., electrical equipment) where animals, excreta and nesting materials are identified

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- Disturbing building materials or occupying areas with visible mold growth due to building materials that have been wetted by rain/snow intrusion or leaks in water systems
- Exposure to water mists/vapor from evaporative water systems and cooling towers that are not maintained to prevent growth of water-borne bacteria such as *legionella*.

### 3.2 Building Managers

Maintain facilities in sanitary and good working condition by:

- Taking action to prevent pathways for animal intrusion, where feasible.
- Contacting Biological Control to report areas of animal infestation and to request removal of animals in traps, per TFC-ESHQ-ENV\_PP-C-09.
- Minimizing conditions associated with animal infestation by containing food/food waste per TFC-ESHQ-S-STD-27:
  - Coordinating frequent, i.e., daily or several times per week, removal of food waste from kitchen areas to maintain facility sanitation.
  - Covering or maintaining kitchen area waste receptacles in a sanitary condition.
- Promptly repairing leaks in facilities to prevent water intrusion and mold growth.
- Maintaining evaporative water systems outside of the temperature range where *Legionella* are active/can reproduce, or use biocides or chlorination to minimize bacterial growth:
  - Maintain cold water systems at < 68 degrees Fahrenheit
  - Maintain hot water systems at > 122 degrees Fahrenheit.

When the above measures are not sufficient and the presence of HBA is visible, and/or as requested by Responsible Managers and/or S&H, notify facility occupants of the potential for biological hazards in the workplace.

- As needed and requested by Responsible Managers, with S&H input, isolate the affected area and coordinate temporary relocation of facility occupants and/or stored items to facilitate remediation of the affected area.
- As needed and requested by Responsible Managers, request carpet and upholstery cleaning to remediate the affected area.
- Inform subcontractors who perform carpet and upholstery cleaning of potential HBA hazards to meet hazard communication requirements.

### **3.3 Janitorial Services**

- Reports facilities where occupant practices with food/containerization/food waste issues have created vermin infestation, and/or where mold is observed, to the responsible manager.
  - Cleans minor amounts of blood or blood-contaminated materials per TFC-ESHQ-S-STD-24
  - Cleans minor amounts of rodent droppings in occupied facilities and sanitize surfaces, as feasible per TO-100-052.

### **3.4 Responsible Managers**

- With S&H and/or employee input, determine through visual inspection, if an area is animal-infested and beyond the scope of janitorial clean-up.
- For clean-up activities not within the scope covered by Janitorial Services, ensure cleanup is performed in accordance with TO-100-052 and TFC-ESHQ-S-STD-24.

### **3.5 Industrial Hygiene**

- Communicates program requirements, review disinfectant products, provide input for JHAs, identify personal protective equipment (PPE) (see Table 1), and provide project-specific guidance when requested.
- Works with Responsible Managers, Building Managers, and others to inform occupants of potential issues and resolutions relating to the presence of hazardous biological agents.

### **3.6 Waste Services**

Performs waste determination as needed to support work performed under TO-100-052.

### **3.7 Training**

Provides general employee training on HBA hazards and controls.

### **3.8 Employees**

- Recognize conditions where risk of HBA contact may be present and immediately report to your supervisor, and/or S&H representative.
- Avoid direct skin contact with, or inhalation of potential HBAs.
- Do not touch or capture live or dead animals, unless authorized to do so, and in accordance with direction in TFC-ESHQ-ENV\_PP-C-09.
- Report animal concerns to your Facility or Building Manager and Environmental professional in accordance with TFC-ESHQ-ENV\_PP-C-09.

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- Clean up food waste promptly and utilize kitchen trash receptacles to prevent attractive conditions for animal intrusion, in accordance with TFC-ESHQ-S-STD-27.
- Keep doors and windows closed to minimize animal intrusion.
- Recognize the biohazard signs, as shown in Attachment A.
- Do not enter biohazard posted areas unless authorized to do so for work activities, and only when wearing the appropriate PPE for the area.

#### 4.0 DEFINITIONS

Aerosol, aerosolized. A suspension of small (< 5µm) particles or droplets in the air. Aerosolized biological agents may remain suspended in air for long periods and may travel long distances. Aerosol (or airborne) transmission occurs when an aerosol containing a biological agent is inhaled by and infects another person. Aerosols are generated naturally by coughing, sneezing, talking or breathing.

Biological Agents. Biological agents include microorganisms such as bacteria, virus, fungi, and their associated toxins. Hazardous biological agents could adversely affect human health in a variety of ways, ranging from relatively mild, allergic reactions to serious medical conditions. Microorganisms are widespread in the natural environment and are found in water, soil, plants, and animals.

Bloodborne pathogens. Pathogenic microorganisms present in human blood and certain other bodily fluids and can cause disease in humans. These pathogens include, but are not limited to, hepatitis B virus and human immunodeficiency virus.

Disinfectant. Substance applied to non-living objects to destroy most infectious microorganisms.

Hantavirus Pulmonary Syndrome (Hantavirus Cardiopulmonary Syndrome). Illness caused by infection with *Sin Nombre* virus, characterized by acute respiratory distress, thought to be transmitted by aerosols of infected rodent feces, urine, and saliva.

Hazardous Biological Agent. A viable micro-organism or its toxin, which causes or may cause disease in humans or animals, or any other agent that causes or may cause severe, disabling, or fatal disease. All blood and body fluids fall under this definition since they are assumed to contain blood borne pathogens.

Infestation. To inhabit or overrun in numbers or quantities large enough to be harmful or threatening.

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## **5.0 SOURCES**

### **5.1 Requirements**

5.1.1 29 CFR 1910.1200, "Hazard Communication."

5.1.2 29 CFR 1926.32 (f), "General Safety and Health Provisions, Definitions."

### **5.2 References**

5.2.1 TFC-ESHQ-ENV\_PP-C-09, "Ecological, Cultural, and Biological Controls."

5.2.2 TFC-ESHQ-RP\_MON-C-14, "Radiologically Contaminated Area Controls."

5.2.3 TFC-ESHQ-S-STD-24, "Bloodborne Pathogen Exposure Control Standard."

5.2.4 TFC-ESHQ-S-STD-27, "Housekeeping/Sanitation."

5.2.5 TFC-OPS-MAINT-C-01, "Tank Operations Contractor Work Control."

5.2.6 TF-RC-050, "Perform Soil, Wildlife, and Vegetation Surveys."

5.2.7 TO-100-052, "Perform Waste Generation, Segregation, Accumulation and Clean-up."

**Table 1. Personal Protective Equipment Selection Guidelines for Cleaning HBA.**

<b>Conditions of Use</b>	<b>Recommended Respiratory and PPE</b>
<b>Janitorial clean-up indoors, occupied facilities under</b> TO-100-052, Minor rodent contamination, facility under active ventilation, RWP not required, SJHA identifies hazards	Nitrile, latex, or surgeon's gloves
<b>Entry/Clean-up of Tank Farm Areas under</b> TO-100-052, Minor to moderate HBA contamination, facility/area can be ventilated, exposed to sunlight	Nitrile, latex, or surgeon's gloves Disposable Coveralls and SCBA (where required)
<b>Entry/Clean-up of Tank Farm Areas under</b> TO-100-052, Moderate to heavy HBA contamination, facility/area areas with limited ventilation and/or other hazards	Nitrile, latex or surgeon's gloves (2 pair) Disposable Coveralls APR PAPR* equipped with P-100 filters or SCBA (where required)
NOTE: A tight-fitting PAPR may be used in lieu of any APR whenever (1) the employee chooses and (2) the respirator provides adequate protection.	



**Table 2. Disinfectant Class and Use Based on Order of Organism Susceptibility.**

<b>Type of Biohazard</b>	<b>Disinfectant</b>	<b>Comments</b>
<b>1. Fungi</b> (Candida, Cryptococcus, Aspergillus, Dermatophytes)  <b>2. Bird Droppings</b> (may contain fungal spores, bacteria, and viruses)	Peroxide, 10% Chlorine bleach solution or Lemon HG	See Table 3 for mixing instructions
<b>3. Vegetative Bacteria</b> (Staphylococcus, Salmonella, Pseudomonas, coliforms)  <b>4. Blood and blood borne pathogens</b> (hepatitis B & C viruses, HIV)  <b>5. Rodent Droppings</b> (Hantavirus)	Phenolics, Quaternary Ammoniums, or  10% Chlorine bleach solution or Lemon HG	See Table 3 for mixing instructions

Table 3. Disinfectant Selection for TOC.

Disinfectant	Approved Product	Product Use	Approximate Contact Times (Consult Product Label)	Can Disinfected Waste be disposed of as Non-Regulated Waste? Y*/N  *NOTE: 1) <b>Animal carcasses, free liquids and large amounts</b> of biological waste are <b>prohibited</b> in the regular trash.  2) <b>Unused</b> disinfectant RTU products and/or <b>prepared disinfectant</b> solutions must have a <b>waste determination</b> prior to disposal.
Chlorine	Bleach MSDS# 012915A	Mix one part bleach/9 parts water, solution made daily	10 minutes	No. Disinfected Waste is regulated. Request container(s) for disposal.
3% Hydrogen Peroxide	<b><i>Oxivir TB</i></b> MSDS# 073408	Ready to Use (RTU)	10 minutes	<b>Yes. Small amounts of disinfected wastes may be placed into regular trash</b> , otherwise, request container(s) for disposal for work under occurring TO-100-052
Phenolic	<b><i>Lysol</i></b> MSDS# 073292	Ready to Use (RTU)	10 minutes	<b>Yes. Small amounts of disinfected wastes may be placed into regular trash</b> , otherwise, request container(s) for disposal for work under occurring TO-100-052
Quaternary Ammonium	<b><i>Lemon HG</i></b> MSDS# 054060	Mix 2 oz/1 gal water, solution made daily	10 minutes	<b>Yes. Small amounts of disinfected wastes may be placed into regular trash</b> , otherwise, request container(s) for disposal for work under occurring TO-100-052

The following table provides general guidelines and precautions that should be considered if developing a job specific HBA cleanup work package per TFC-OPS-MAINT-C-01 and TO-100-052. This guideline is for cleaning and disinfecting of surfaces and materials contaminated with mold and/or animal excreta. It is not applicable to remediation of dirt/dirt floors. Cleaning and disinfectant products are intended for use in the removal of mold and/or animal excreta from porous and non-porous surfaces, and the disinfection of hard, non-porous surfaces.

**Table 4. General Guidelines and Precautions for Cleanup of Hazardous Biological Agents (HBA).**

•	If affected areas is an enclosed space, <b>Ventilate</b> for <b>30 minutes</b> prior to entry;
•	If cleanup is within a posted RCA, dose rate and radiologic contamination surveys of the HBA should be completed prior to material disturbance;
•	After wetting of HBA with disinfectants, <b>allow wait time</b> for deactivation/soaking per the manufacturer/product recommendations;
•	<b>Remove and containerize visible HBA debris and cleaning supplies</b> (e.g., paper towels, rags) using <b>wet methods</b> ;
•	<b>Do NOT</b> dry sweep or dust;
•	HEPA-vacuuming is generally <b>not recommended</b> for clean-up of HBA but may be appropriate for certain areas/activities, per direction of S&H Professionals and with concurrence of Environmental Professionals for use of HEPA-vacuum;
•	For remediation of mold on drywall/wood/carpet, use appropriate tools to cut out affected materials with visible mold or water damage;
•	<b>Wrap waste and dispose</b> of per TO-100-052;
•	After HBAs have been removed, disinfect substrate surfaces a second time
•	Work gloves should be sprayed with disinfectant prior to doffing and dispose of with HBA waste;
•	If respirators are used, wet-wipe the respirator with disinfectant prior to returning it to the respirator station;
•	Following HBA cleanup, <b>wash hands thoroughly</b> with disinfectant soap before eating, drinking, or smoking.

### **ATTACHMENT A – BIOHAZARD SIGN**

This sign should be posed during clean-up of biological hazards, and may be removed after the work area has been cleaned and disinfected. The symbol on the sign is normally associated with the human bloodborne hazards.

